

DRAFT

**GUIDELINES FOR DEVELOPMENT
WITHIN THE
WILDLAND/URBAN INTERFACE**

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DRAFT GUIDELINES FOR DEVELOPMENT WITHIN THE WILDLAND/URBAN INTERFACE

INTRODUCTION

A. PREFACE

Montana Code Annotated section 76-13-104(8)) requires that the Montana Department of Natural Resources and Conservation (DNRC) adopt administrative rules that address development within the wildland/urban interface (WUI). This includes, but is not limited to, best practices for development within the WUI and criteria for providing grant and loan assistance to local government entities to encourage them to adopt those practices. These Guidelines, which will be adopted by reference pursuant to the Montana Administrative Procedure Act, will partially fulfill DNRC's rulemaking mandate.

1. Wildfire Protection

In Montana, summer typically brings the fire season; the result of low rainfall, high temperatures, low humidity, and summer thunderstorms. Nevertheless, major wildfires may occur at any time of the year. Varied topography, a semi-arid climate, and numerous human-related sources of ignition make this possible. But Montanans can readily protect lives, property, natural resources, and scenic beauty and greatly facilitate the work of fire suppression organizations by following these guidelines. This is especially important in the WUI, where wildfires threaten homes and other buildings.

2. Wildland/Urban Interface Categories

Since the mid-1960s people have subdivided and developed wildlands for residential, recreational and commercial uses. This development has created many communities mixed with wildland vegetation. Fire Protection Specialists call these areas the WUI.

A WUI fire situation exists anywhere that structures are located close to natural vegetation. A fire can spread from the vegetation to structures or vice-versa. A WUI can vary from a large housing development adjacent to natural vegetation to a structure(s) surrounded by natural vegetation. There are two general categories of WUI:

- a. **Boundary WUI** - an area where a clearly defined, linear boundary of homes meets wildland vegetation. Typically, we find this sort of interface on the fringe of large towns.
- b. **Intermix WUI** - an area where structures are scattered among or mixed with wildland vegetation, without a clearly defined boundary. Typically, we find the intermix WUI in rural areas where people have subdivided wildlands into small parcels of 1 to 40 acres.

3. **Purpose of Development Guidelines**

These guidelines may be used by local government entities, fire protection agencies, planners, developers, and homeowners to improve protection of life, property and resources from wildland fire. However, because Montana is so large and diverse in terrain, vegetation and weather, the guidelines must be applied with flexibility and in consultation with local fire experts. The ultimate goal is the protection of life, property, and resources and there are several alternatives to achieving that end.

B. COMMON WILDLAND/URBAN INTERFACE PROBLEMS

Fire protection agencies, local government entities, developers, planners, and landowners must work together to improve fire protection in the WUI. Some common problems are:

1. Responsibilities and jurisdictions of different fire-protection agencies are sometimes unclear.
2. The responsibilities of the developer, planner, and landowner are not well defined. Few people who live, plan, and develop in the WUI recognize the wildfire hazards. Consequently, they seldom invest in appropriate fire prevention measures.
3. Frequently no fire protection agency takes the responsibility for adopting or enforcing local and State fire regulations.
4. Firefighters often find inadequate roads, insufficient water, and a build-up of natural fuels.
5. Some WUI areas have no organized fire-protection agency.

Wildfire disasters in WUI areas are common in many parts of the nation, and the problem is increasing. This can be corrected only through comprehensive planning that includes housing development design, fuels management, and public education. A fire-protection agency by itself will not suffice.

These Guidelines describe how to reduce risk by reducing and managing the buildup of fuels, building and maintaining adequate road systems, and providing adequate water to firefighters. These steps, along with the use of fire-resistant materials and designs for homes and outbuildings, can work in conjunction to protect lives, property and natural resources across the State of Montana.

C. DEVELOPMENT OF THESE GUIDELINES

The development of these Guidelines began in the winter of 2007/2008 by many groups, organizations, government agencies and individuals as concerns grew about protection of lives, property and natural resources from unwanted wildfire across Montana.

Between the severity of the annual fire seasons and the continued development of the WUI, fire-suppression costs escalated, giving even more reason to encourage homeowners, developers and others to take on some of the responsibility of protecting homes and developments from wildfire (see Appendix A).

The 2007 the Montana State Legislature saw the need for these Guidelines and mandated DNRC to work toward their development and their adoption as administrative rules. The legislation included the following statutes:

76-13-115. State fire policy. The legislature finds and declares that:

- (1) the safety of the public and of firefighters is paramount in all wildfire suppression activities;
- (2) it is a priority to minimize property and resource loss resulting from wildfire and to minimize expense to Montana taxpayers, which is generally accomplished through an aggressive and rapid initial attack effort;
- (3) interagency cooperation and coordination among local, state, and federal agencies are intended and encouraged, including cooperation when restricting activity or closing areas to access becomes necessary;
- (4) fire prevention, hazard reduction, and loss mitigation are fundamental components of this policy;
- (5) all property in Montana has wildfire protection from a recognized fire protection entity;
- (6) all private property owners and federal and state public land management agencies have a responsibility to manage resources, mitigate fire hazards, and otherwise prevent fires on their property;
- (7) sound forest management activities to reduce fire risk, such as thinning, prescribed burning, and insect and disease treatments, improve the overall diversity and vigor of forested landscapes and improve the condition of related water, wildlife, recreation, and aesthetic resources; and
- (8) development of fire protection guidelines for the wildland-urban interface is critical to improving public safety and for reducing risk and loss.

76-13-104. Functions of department -- rulemaking. (1) The department has the duty to ensure the protection of land under state and private ownership and to suppress wildfires on land under state and private ownership. No fees may be collected for this purpose except fees provided for in 76-13-201.

(2) (a) The department shall adopt rules to protect the natural resources of the state, especially the natural resources owned by the state, from destruction by fire and for that purpose, in declared emergencies, may employ personnel and incur other expenses when necessary.

(b) The department may adopt and enforce reasonable rules for the purpose of enforcing and accomplishing the provisions and purposes of part 2 and this part.

(3) The duty imposed on the department under this section is not exclusive to the department and does not absolve private property owners or local governmental fire agencies organized under Title 7, chapter 33, from any fire protection or suppression responsibilities.

(4) The department may give technical and practical advice concerning forest, range, water, and soil conservation and the establishment and maintenance of woodlots, windbreaks, shelterbelts, and fire protection.

(5) The department shall cooperate with all public and other agencies in the development, protection, and conservation of the forest, range, and water resources in this state.

(6) The department shall establish and maintain wildland fire control training programs.

(7) The department shall appoint firewardens in the number and localities that it considers necessary, subject to confirmation by the local county government, and shall adopt rules prescribing the qualifications and duties of firewardens that are in addition to those provided in 76-13-116.

(8) By October 1, 2008, the department shall adopt rules addressing development within the wildland-urban interface, including but not limited to:

(a) best practices for development within the wildland-urban interface; and

(b) criteria for providing grant and loan assistance to local government entities to encourage adoption of best practices for development within the wildland-urban interface.

With that mandate, the following groups, organizations and government agencies collaboratively assisted DNRC in the fulfillment of its mandate to develop these Guidelines:

Montana League of Cities and Towns
Montana Farm Bureau
Montana Association of Counties
United Department of Agriculture State Forest Service
United States Department of Interior Bureau of Land Management
Montana Department of Labor and Industry
Montana Wood Products Association
Montana Association of Realtors
Independent Insurance Agents of Montana
Montana Department of Commerce
Montana Fire Chiefs Association
Montana State Fire Marshal
Montana Disaster and Emergency Services
Montana Health and Human Services
FireSafe Montana
Lewis and Clark County
North Western Energy
Montana Smart Growth Coalition
Montana Bankers Association
Flathead Electric
Fire Logistics Incorporated

D. PURPOSE

These guidelines have been developed to give local governmental entities a tool to assist them in the development of regulations that can be used to help ensure the safety of the public and firefighters and to protect homes, businesses and other values at risk in the wildland/urban interface. These are only guidelines. Local governmental entities must examine their individual situations and challenges. This examination may lead to

deviations from these guidelines. These are minimum guidelines, and counties and Authority Having Jurisdiction (AHJ) may apply more stringent standards where appropriate.

Rules for construction techniques are being addressed by the Montana Department of Labor and Industry (DLI).

Developments in science and technology, along with the adoption of new rules by the State of Montana and its counties governing construction and fuels mitigation in the WUI, will present new ideas and direction for homeowners and other residents of the WUI.

E. **DEFINITIONS**

1. **Access**

- a. **Legal Access.** A property fronting a public (city, county, state, or federal) street, road, or easement that has been dedicated for public use, or a private street, road or easement that has been dedicated for either public or private use.
- b. **Physical Access.** A property fronting a street, road or driveway that has been constructed in conformance with road standards adopted by the AHJ.
- c. **Access.** From a practical standpoint, access shall be defined as a road or roads that provide all-weather, all-season access.

- 2. **Accessory Building or Structure:** Any building or structure used incidentally to another building or structure. It may be unenclosed, without a complete exterior wall system enclosing the area under roof or floor above.

- 3. **Alternative:** A system, condition, arrangement, material, or equipment submitted to the Fire Protection Authority (“FPA”) or AHJ as a substitute for applicable requirements.

- 4. **Approved:** Acceptable to the FPA or other entity having jurisdictional authority.

- 5. **Aspect:** Compass direction toward which a slope faces.

- 6. **Authority Having Jurisdiction (AHJ):** Jurisdictions, approving agencies, code officials, private entities and/or property owners may assume the role of an AHJ, given a statutory authority or legal responsibility.

- 7. **Building:** Any structure used or intended for supporting any use or occupancy.

- 8. **Building Envelope:** The designated area of a lot within which a structure or structures can be built and which is depicted or described on a site plan or final subdivision plat.

9. **Canyon**: A deep valley with steep slopes carved from the landscape by a river or a stream.
10. **Code Official**: The official or authorized representative designated by the AHJ to interpret and enforce applicable codes.
11. **Combustible**: Any material that, in the form in which it is used and under conditions anticipated, will ignite and burn (see Noncombustible).
12. **Community Wildfire Protection Plan (CWPP)**: CWPPs are authorized and defined in Title I of the Healthy Forests Restoration Act (“HFRA”) passed by Congress on November 21, 2003 and signed into law by President George W. Bush on December 3, 2003.
13. **Critical Fire Weather**: A set of weather conditions (usually a combination of high temperatures, low relative humidity and strong wind) whose effects on fire behavior make control difficult and threaten firefighter safety.
14. **Cul-de-sac**: A short street or road with a bulb- or hammer head-shaped turnaround at its end.
15. **Defensible Space**: An area, either natural or man-made, where material capable of allowing a fire to spread unchecked has been treated, removed or modified to slow the rate and intensity of an advancing wildfire and to provide a safe working area for wildfire suppression operations to occur while protecting life and/or improved property.
16. **Development**: Land use development or construction projects that involve substantial property improvement and usually a change in the land-use character within a subject property or properties. Such development generally involves using land for residential or commercial/industrial purposes.
17. **DLI**: Montana Department of Labor and Industry.
18. **Driveway**: A vehicular ingress and egress route that serves no more than two buildings or structures or no more than five dwelling units, not including accessory structures.
19. **Dwelling**: Any structure or portion thereof providing complete, independent living facilities for one or more households.
20. **Easement**: The right of a property owner to use all or a portion of another’s property for a specified purpose, created by law, agreement, deed, or other recorded document.
21. **Evacuation**: The temporary movement of people and their possessions from locations threatened by a hazard.
22. **Fire Chimney**: Topographical features, usually canyons, gulches or valleys, which tend to funnel or otherwise concentrate fire toward the top of steep slopes. Fire

Chimneys are generally less than ½ mile in length, have slopes of 20% or steeper, are less than 600 feet wide, and are at least 120 feet deep as measured from the bottom of the ravine to the crest of either adjacent ridge or slope.

23. **Fire Flow**: The flow rate of a water supply (measured at 20 psi (137.9 kPa) residual pressure) that is available for firefighting.
24. **Fire Hazard**: A fuel complex (defined by kind, arrangement, volume, condition, and location) that determines the ease of ignition and/or resistance to fire control.
25. **Fire Hydrant**: A valved connection on a year-round water supply system having one or more outlets that is used to supply water for fire departments.
 - a. **Pressurized Hydrant**: An arrangement of pipe permanently connected to a year-round water source with a pressurized water supply system that provides a ready means of water supply for firefighting purposes.
 - b. **Dry (Draft) Hydrant**: An arrangement of pipe permanently connected to a year-round water source other than a piped, pressurized water supply system that provides a ready means of water supply for firefighting purposes and that utilizes the drafting (suction) capability of fire department pumpers.
26. **Fire Protection Feature**: A fire protection feature is any feature outlined in the fire prevention plan or fire protection plan, or any other features that aid in the prevention or protection from fire.
27. **Fire Protection Plan**: A document prepared for a specific project or development proposed for the wildland/urban interface area. It describes ways to minimize and mitigate the fire problems created by the project or development, with the purpose of reducing impact to (and enhancing) the community's fire protection delivery system.
28. **Fire Resistance Rated Construction**: The use of materials and systems in the design and construction of a building or structure to safeguard against the spread of fire within a building or structure and the spread of fire to or from buildings or structures to the WUI area.
29. **Fire Weather**: Weather conditions favorable to the ignition and rapid spread of fire. In wildfires, this generally includes high temperatures combined with strong winds and low humidity. See "Critical Fire Weather."
30. **Fuels**: All combustible materials within the WUI including, but not limited to, vegetation and structures.
31. **Fuel Break**: An area, strategically located for fighting anticipated fires, where the native vegetation has been modified or replaced so that fires burning into it can be more easily controlled. Fuel breaks divide fire-prone areas into smaller areas for easier fire control and to provide access for firefighting.

32. **Fuel Loading**: The volume of fuel in a given area. Generally expressed in tons or pounds per acre, fuel loading may be referenced by fuel size or timelag categories, and may include surface fuels or total fuels.
33. **Fuel Mosaic**: A fuel modification system that provides for the creation of islands and irregular boundaries to reduce the visual and ecological impact of fuel modification.
34. **Governing Body**: A Board of County Commissioners or the governing authority of a City or Town as organized pursuant to law (Montana Code Annotated section 76-3-103(7)).
35. **Greenbelt**: An area with fire-resistive vegetation (planted or native), maintained to cause a reduction in fire intensity, and used for purposes other than fire protection (golf course, cemetery, park, playground, mowed park, orchard, etc.).
36. **Ground Fuels**: All combustible materials such as grass, duff, loose surface litter, tree or shrub roots, rotting wood, leaves, peat, or sawdust that typically support combustion.
37. **Gulch**: A V-shaped valley formed by erosion. It may contain a small perennial or ephemeral stream.
38. **Hammer Head Turnaround**: A cul-de-sac that terminates with a T-shaped turnaround similar to the head of a hammer.
39. **Hazard**: A fuel complex defined by kind, arrangement, volume, condition, and location that determines the ease of ignition and/or of resistance to fire control.
40. **Ignition-Resistant Material and Construction Classes**: Any product designed for exterior exposure that, when tested, meets applicable standards.
41. **Improved Property**: A piece of land or real estate upon which a structure has been placed, a marketable crop is growing (including timber), or other property improvement has been made.
42. **Jurisdiction**: The legal power, right or authority over a territory, or the territory within which each may be exercised.
43. **Ladder Fuels**: Fuels that provide vertical continuity, allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease.
44. **Land or Property Owner**: Any and all individuals, organizations, corporations, or other parties with a titled interest in the subject property. For all other purposes of these regulations, the terms “property owner,” “landowner,” and “owner” mean both the seller and the purchaser under a contract for deed.
45. **Land Use**: The type or degree of activity occurring or intended to occur on a piece of land.

46. **Life Safety**: Actions taken to prevent the endangerment of people threatened by emergency incidents or by activities associated with the management.
47. **Local Government**: This includes city councils, county commissions, and other elected and appointed officials who work for local government.
48. **Mitigation**: Action that moderates the severity of a fire hazard or risk.
49. **Noncombustible**: A material that, in the form in which it is used and under the conditions anticipated, will not aid combustion or add appreciable heat to an ambient fire.
50. **Obstructions**: Any object or collection of objects that may deter, hinder or block access.
51. **Occupancy**: The purpose for which a building or portion thereof is used or intended to be used.
52. **Open Space**: Land or water areas provided or preserved in an essentially undeveloped state for active or passive park or recreation purposes, land conservation or other natural resource protection, historic or scenic purposes, or assisting in the shaping of the character, direction, and timing of community development.
53. **Planned Unit Development (PUD)**: A land development project consisting of residential clusters, industrial parks, shopping centers, or office building parks that compose a planned mixture of lands uses built in a prearranged relationship to each other and having open space and community facilities in common ownership or use (Montana Code Annotated section 76-3-103(10)).
54. **Primary Access Road**: A main entry and exit road. Usually the road(s) that provide access to the development from a highway, county road, or major arterial. Must provide for unobstructed traffic circulation during an emergency.
55. **Private Road or Street**: A street or road for which the right-of-way or easement has not been dedicated as a public road or street.
56. **Public Road or Street**: A street or road for which the right-of-way or easement has been dedicated to or acquired by a governing body for public use.
57. **Protection Zone**: The exterior construction and maintenance of a structure, coupled with the fuel reduction around the structure that limits, or stops fire's spread to or from a structure.
58. **Rated Roof**: A roof constructed with a "roof covering assembly" that is listed as meeting the requirements for Class A, B, or C "roof covering as defined by the Department of Labor and Industry Building Codes Bureau.

59. **Risk**: The measure of the probability and severity of adverse effects to persons or property that results from an exposure to a wildland fire (direct flames, radiant heat, or firebrands).
60. **Secondary Road**: A road that leaves a primary access road to reach homes, buildings, recreational sites, etc. that lie away from the primary road.
61. **Street or Road**: Any access, not including a driveway, providing access to more than one parcel and primarily intended for vehicular access.
62. **Slash**: Accumulation of any burnable, organic material that has been severed or removed from its natural state.
63. **Slope**: Upward or downward incline or slant, usually calculated as a percent of slope (rise or fall per 100 ft. (30.45m) of horizontal distance).
64. **Street or Road Identification Signs**: Any sign containing words, numbers, directions, or symbols that provide information to emergency responders.
65. **Structure**: That which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.
66. **Structure Protection**: Protecting a structure from the threat of damage from an advancing wildland fire. This involves the use of standard wildland protection tactics, control methods, and equipment, including fire control lines and the extinguishment of spot fires near or on the structure. The protection can be provided by both the rural and/or local government fire department and the wildland fire protection agency.
67. **Subdivision**: A division of land or land so divided that it creates one or more parcels containing less than 160 acres that cannot be described as a one-quarter aliquot part of a United States government section, exclusive of public roadways, in order that the title to or possession of the parcels may be sold, rented, leased, or otherwise conveyed and includes any resubdivision and further includes a condominium or area, regardless of its size, that provides or will provide multiple space for recreational camping vehicles or mobile homes. (Montana Code Annotated section 76-3-103(15)).
68. **Surface Fuels**: All materials lying on or immediately above the ground, including needles, leaves, duff, grass, small dead wood, downed logs, stumps, large limbs, low brush, and reproduction.
69. **Survivable Space**: Survivable space is defined as the characteristics of a structure and the adjacent area and their ability to survive a wildland fire. Appropriate and applicable survivable space provisions provide the best chance for a structure to resist loss and/or major damage during a wildland fire, on its own, without direct suppression intervention by firefighters.

70. **Traffic Lane**: That portion of a roadway that provides a single lane of vehicle travel in one direction.
71. **Tree Crown**: The primary and secondary branches growing out from the main stem, together with twigs and foliage.
72. **Turnaround**: A portion of a street or road, unobstructed by parking, that allows for a safe reversal of direction for emergency equipment.
73. **Turnout-Pullout**: An area along the edge of a street or road that provides a space for a vehicle to safely move out of a traffic lane in order to permit the passage of emergency or other types of vehicles.
74. **Valley**: An elongated depression of the earth's surface, usually found between ranges of hills or mountains.
75. **Vegetation**: Any plant, native or planted, living or dead; tree, shrub, bush, grass, flower, etc.
76. **Vegetation Management Plan**: A vegetation management plan reduces the amount of fuel available for wildland fires, reducing the probability of a rapidly spreading wildland fire. Elements of the plan include removal of slash, snags, other ground fuels, surface fuels, ladder fuels and dead trees, and thinning of live vegetation.
77. **Water Supply**: An acceptable source of water for fire fighting activities.
78. **Wildland**: An area in which development is essentially nonexistent except for roads, railroads, power lines, and similar facilities.
79. **Wildland Fire or Wildfire**: An unplanned and uncontrolled fire spreading through vegetative fuels, at times involving structures.
80. **Wildland Fire Protection**: Any non-structure fire protection that occurs in the wildland with the primary responsibility of protecting natural resources and watersheds from damage. State and federal forestry or land management and some local government agencies normally provide wildland fire protection.
81. **Wildland/Urban Interface**: The presence of structures in locations in which the FPA or AHJ determines that topographical features, vegetation fuel types, local weather conditions, and prevailing winds, in conjunction with structural ignitability, may result in the potential for ignition of the structures within the area from flames and firebrands of a wildland fire.

SECTION I: BEST PRACTICES FOR SUBDIVISION REGULATIONS

A. INTRODUCTION

These Guidelines provide a list of recommendations that can be incorporated into local subdivision regulations. These would apply to the development of lots in new subdivisions. These Guidelines do not include structural elements that are the responsibility of DLI .

B. PURPOSE

1. The purpose of these Guidelines is to provide a means to protect the public health, safety and welfare by establishing recommendations for new subdivisions to:
 - a. Reduce threats to life safety, property, and resources by improving access to and defensibility of developments, homes and other property in wildland/urban interface areas;
 - b. Minimize the potential of spreading fire from wildland areas to structures and from structure fires to wildland areas, and permit efficient suppression of fires;
 - c. Identify the appropriate use of cul-de-sacs, hammer head turnarounds, and turnouts on streets and roads providing legal and physical access to new subdivisions with the intent to provide better emergency access to remote areas;
 - d. Recommend that new subdivisions and planned unit developments developed in the WUI should provide water supply systems with suitable access for firefighting crews and apparatus, with the intent to increase the resources available to such crews and minimize the spread of a wildland or structure fire.
 - e. Educate property owners, residents, and people that they have a responsibility for prevention of wildland fire on their own property pursuant to §76-13-115 (6), MCA and §76-13-212, MCA.

C. AUTHORITY

1. In conformance with §76-3-504(1)(e), MCA, these Guidelines may be applied to subdivision regulations adopted on or after 10/1/09 for fuels mitigation, road access, and water supply.

D. GUIDELINES

1. **Fuel Mitigation**

a. **Defensible Space**

- i. Each lot within a new subdivision should have a building envelope designated on the final plat for the subdivision. The structures located on each lot should be located within the building envelope as determined by the governing body.
- ii. Each building envelope should have a minimum protection zone established prior to filing of the final plat for the subdivision, and the protection zone should be based on the attached guideline chart (see Protection Zone Guidelines, Appendix B).

b. **Vegetation Management Plan**

- i. The subdivider should provide a vegetation management plan for all properties within the subdivision, including the open space.
- ii. The plan should be approved by the AHJ and should be implemented prior to the filing of the final plat for the subdivision. The intent of a vegetation management plan is to reduce fuel loading and provide continuous maintenance of the fuel load. The plan should address managing vegetation to meet the following goals:
 - a) Protect life and property.
 - b) Reduce the potential for a fire on improved property to spread into wildland fuels, and for a fire in wildland fuels to spread into improved property or structures. This also applies to reducing the potential for a fire spreading to or from lands adjacent to the subdivision.
 - c) Provide safe working areas for emergency responders fighting fire.
 - d) Maintain important native plant communities, the ecological processes that influence them, and consistency with fish and wildlife habitat conservation goals. Consulting with biologists in the preparation and implementation of the vegetation management plan is strongly encouraged.
 - e) All areas within five (5') feet of each side of a driveway should be cleared of vegetation prior to the construction of any new structures or the alteration, moving, or change of use of an existing structure on an existing lot.

2. **Site Development**

- a. **Steep Slopes.** Structures in new subdivisions should not be sited in areas where the slope exceeds 30 percent as measured before disturbance or alteration. Any proposed lot within a new subdivision that has slopes that exceed 30 percent should have a building envelope established on the final plat for the subdivision that provides for a building site on slopes less than 30 percent. The structures located on each lot should be located within the building envelope as determined by the governing body.
- b. **Fire Chimneys.** Buildings and building sites are discouraged within ravines or other topographical features which constitute "fire chimneys," and within 150 feet of the apex of "fire chimneys."
- c. **Improvements Prior to Construction.** Water sources, wells, draft sites, hydrants, fire breaks, access routes, and other fire protection equipment or features required by the preliminary plat approval should be installed prior to construction of any residential or commercial/industrial structures in a new subdivision.

3. **Fuelbreaks and Greenbelts**

WUI fire protection may rely on fuelbreaks and greenbelts to separate communities, groups of structures, or individual homes. These breaks can slow or stop the spread of an oncoming fire. Locate fuelbreaks and greenbelts to protect both existing and planned developments and adjacent wildlands.

Good landscaping design can incorporate vegetation or fire fuelbreaks in planned developments. These fuelbreaks should not be a bare soil trail bulldozed around a subdivision, but can be as simple as the removal of dead and fallen trees, tree limbs, shrubs and other flammable vegetation together with breaking the continuity of vegetation in a band 100-300 feet around the perimeter of the development.

One of the most effective means of providing fire protection is the use of open spaces and public use areas such as parks, recreation sites, picnic areas, and perimeter roads to break fuel continuity.

Natural features such as rocky formations with little or no vegetation, rivers or streambeds in which vegetation has been thinned and dead and dying materials removed can also be utilized in an overall subdivision landscaping plan to help retard an advancing wildfire.

4. **Access**

Most civilian deaths during wildland fires occur during evacuation or attempts to escape from a fire front. Access and egress to developed areas require that public and private roads, bridges, and driveways be properly constructed to provide for safe access and egress for fire personnel and equipment and the public.

Streets and roads providing legal and physical access to lots in new subdivisions and other improvements that help ensure access should address the following. These access guidelines apply to all means of access, public or private.

a. Streets and Roads

- i. Legal and physical access to the lots in all subdivisions and other developments should be provided by a minimum of two approach routes, located as remotely from each other as possible to assure more than one escape route for residents and access routes by emergency vehicles. In addition, it is encouraged that new developments plan for and connect to adjoining properties and their road systems.
 - a) Subdivisions that cannot provide a minimum of two approach routes are discouraged. However they may be allowed if developers can mitigate the risks by use of one or more of the following measures, and when approved by the AHJ:
 - 1) Larger protection zones.
 - 2) Fuel breaks along the roadways.
 - 3) Turnouts and pull-outs.
 - 4) Cul-de-sacs and hammer head turnarounds.
 - 5) Increased flows of fire protection water supply.
 - 6) Fire sprinklers.
- ii. All subdivisions should be designed to ensure that fire apparatus has access to within 150 feet of all portions of the buildings constructed on the lots in a proposed development.
- iii. In areas of extreme fire hazard classification, as determined by the AHJ, the length of a road ending in a cul-de-sac or T shall not exceed 600 feet. In all other areas the maximum length will be 1,000 feet.
- iv. Road Clearance

Roadways and driveways should have a minimum clear width of 12 feet for each lane of travel, not including shoulders. They should have a minimum clearance in height of 13 feet 6 inches.

Roads should be constructed of an all weather surface that is capable of supporting all legal loads and as approved by the AHJ.

v. Grades

Grades should not exceed 10 percent, except as approved by the AHJ.

vi. Bridges and Culverts

Bridges and culverts should be designed to accommodate high water flows and constructed using accepted engineering practices. Bridges should be constructed to accommodate the heaviest legal load allowed. Load limits should be posted on all bridges.

Vegetation should be cleared from around all bridges. Bridges should be constructed of noncombustible material.

vii. Property owners should provide emergency access to all open space within the subdivision. The access should be sufficient to provide access for wildland firefighting vehicles. The fire protection access should be approved by the AHJ.

viii. Roadside Fuel Reduction Recommendations should include:

- a) All areas within five (5') feet of each side of the driving surface on a public street or road should be cleared of all vegetation.
- b) For private streets or roads, the entire width of the private road easement should be cleared of all vegetation.

b. **Gates.**

- i. The clear opening provided through gates should be 2 ft. (0.61 m) wider than the traveled way.
- ii. All gates should be located a minimum of 30 ft. (9.2 m) from the public right-of-way and shall not open outward.
- iii. Fire department personnel should have ready access to locking mechanisms on any gate that restricts access, or the gate should be constructed to "break away."

c. **Signage**

- i. All roads within a new subdivision should be identified with approved non-combustible, reflective road signs that meet the applicable local standard.
- ii. All residential or commercial structures within a new subdivision should be clearly identified prior to occupancy with address numbers that are plainly visible and legible from the street. Numbers should be a minimum of 4" in height and reflective.

5. **Alternative Development**

The AHJ may approve, or recommend approval of, an alternative development proposal when the overall design, as proposed by the applicant, meets or exceeds the intent of these guidelines and is not detrimental to public health, safety, and welfare.

6. **Miscellaneous**

a. **Mapping of Fire Protection Features**

The subdivider should provide a detailed site map, including all fire protection features (i.e., access roads, hydrants systems, water supply points, etc. installed in the development) to the AHJ.

b. **Maintenance of Equipment and Features**

- i. All fire protection equipment and features should be properly maintained to provide at least the same level of performance and protection as designed.
- ii. Maintenance should be ensured by whatever mechanism that is acceptable to the AHJ, upon preliminary plat approval.

SECTION II: BEST PRACTICES FOR ZONING REGULATIONS

A. INTRODUCTION

These guidelines provide a list of recommendations that can be incorporated into city/county zoning regulations for issues such as vegetation management on existing lots, the construction of driveways on existing lots, and the development of lots in subdivisions. While it is recognized that it may be difficult or impossible to enforce these Best Practices on existing developments, all efforts should be made to utilize these as much as possible on existing lots in order to best protect the lives, homes and investments.

B. PURPOSE

The purpose of these Guidelines is to provide a means to protect the public health, safety and welfare by establishing recommendations for development within a zoned area to:

1. Reduce threats to life safety, property, and resources by improving access to and defensibility of developments, homes and other property in wildland/urban interface areas.
2. Minimize the potential of spreading fire from wildland areas to structures and from structure fires to wildland areas, and permit efficient suppression of fires.
3. Encourage development and construction standards that apply to the construction, alteration, moving, or change of use of residential, commercial and accessory structures, with the intent to reduce the threat of loss of life and property due to wildland fires encroaching on developed areas.
4. Identify the appropriate use of cul-de-sacs, hammer head turnarounds, and turnouts on streets and roads providing legal and physical access to new subdivisions with the intent to provide better emergency access to remote areas.
5. Encourage homeowners and neighborhoods to plan, create and maintain protection zones (defensible space) that utilize fire resistant construction and landscaping.
6. Encourage the provision for, and development of, water supply systems and suitable access for firefighting crews and apparatus, with the intent to increase the resources available to such crews and minimize the spread of a wildland or structure fire.
7. Educate property owners, residents, and people that they have a responsibility for prevention of wildland fire on their own property pursuant to §76-13-115 (6), MCA and §76-13-212, MCA.
8. This section is not intended to require the retrofit of roads or water supply features existing lots of record. Fuel mitigation guidelines should be applicable.

C. **AUTHORITY**

These guidelines may apply to development within zoned areas as allowed by parts 2 and 3 of Title 76 Chapter 2 MCA.

D. **APPLICABILITY**

1. Construction of streets or roads used as legal and physical access to developments.
2. The construction of residential, commercial or accessory structures, the alteration of 25% or more of a structure, or the moving or change of use for existing residential, commercial or accessory structures located within the boundaries of the WUI as determined by the AHJ.
3. Accessory structures should be exempt from these regulations, except when located within the protection zone (defensible space).

E. **GUIDELINES**

1. **Fuel Mitigation**

a. **Defensible Space**

- i. Any new construction or the alteration, moving, or change of use of an existing residential or commercial structure should be required by zoning to establish a minimum protection zone based on the attached guideline chart (see Appendix B, Protection Zone Guidelines).
- ii. All accessory structures within the protection zone should meet the fire resistive construction standards established by the DLI.
- iii. Single specimens of trees, ornamental vegetation, cultivated ground cover (such as green grass, ivy, or similar plants), or native grasses and weeds trimmed to a maximum height of four inches (4"), should be allowed provided any such plants do not form a means of readily transmitting fire.

b. **Vegetation Management**

- i. Areas adjacent to streets, roads and driveways should be treated to meet the recommendations in a. iii above with the exception of single specimens of trees.
 - a). For driveways, all areas within five (5') feet of each side of the driveway should be cleared.
 - b). For streets and roads, the entire width of the access easement or right-of-way should be cleared.

2. **Site Development and Building Construction Standards**

- a. **Steep Slopes.** Structures should not be sited in areas where the slope exceeds 30% as measured before disturbance or alteration. Existing structures that are on such slopes should not be altered or moved.
- b. Buildings and building sites should be prohibited within ravines or other topographical features which constitute "fire chimneys," and within 150 feet of the apex of "fire chimneys."
- c. **Construction of Residential, Commercial or Accessory Structures.** The construction of new residential, commercial or accessory structures and the substantial improvement, relocation and replacement of existing structures should consider the allowed construction techniques developed by the DLI.
- d. **Vegetation Management Plan.** A Vegetation Management Plan should be developed and approved by the AHJ prior to any new construction or alteration, moving, or change of use of an existing residential or commercial structure on an existing lot.
 - i. **Existing Lot.** The plan approved by the AHJ should be implemented prior to the construction of any new structures or the alteration, moving, or change of use of an existing structure on an existing lot.
 - ii. The plan should address vegetation management to meet the following goals:
 - a) To protect life and property.
 - b) To reduce the potential for a fire on improved property from spreading into wildland fuels and from a fire in wildland fuels from spreading into improved property or structures. This also applies to reducing the potential for a fire spreading to or from adjacent lands.
 - c) To provide safe working areas for emergency responders fighting fire.
 - d) To maintain important native plant communities, the ecological processes that influence them, and consistency with fish and wildlife habitat conservation goals. Consulting with biologists in the preparation and implementation of the vegetation management plan is strongly encouraged.
 - iv. All areas within five (5') feet of each side of a driveway should be cleared of vegetation prior to the construction of any new structures or the alteration, moving, or change of use of an existing structure on an existing lot.

3. **Access**

The majority of civilian deaths during wildland fires occurs during evacuation or attempts to escape from a fire front. Access and egress to developed areas requires that public and private roads, bridges, and driveways be properly constructed to provide for safe access and egress for fire personnel and equipment and the public.

Streets and roads providing legal and physical access to lots in new subdivisions and other improvements that help ensure access should address the following. These access guidelines apply to all means of access public or private.

a. **Streets and Roads**

- i. Legal and physical access to the lots in all subdivisions, approved but not yet built upon, should be provided by a minimum of two approach routes, located as remotely from each other as possible to assure more than one escape route for residents and access routes by emergency vehicles. In addition, it is encouraged that developments plan for and connect to adjoining properties and their road systems.
 - a) Subdivisions that cannot provide a minimum of two approach routes are discouraged. However, they may be allowed if developers can mitigate the risks by use of one or more of the following measures, and when approved by the AHJ:
 - 1) Larger protection zones.
 - 2) Fuel breaks along the roadways.
 - 3) Turnouts and pull outs.
 - 4) Cul-de-sacs and hammer head turnarounds.
 - 5) Increased flows of fire protection water supply
 - 6) Fire sprinklers
- ii. All subdivisions should be designed to ensure that fire apparatus have access to within 150 feet of all portions of the buildings constructed on the lots in a proposed development.
- iii. **Road Clearance**

Roadways should have a minimum clear width of 12 feet for each lane of travel, not including shoulders. They should have a minimum clearance in height of 13 feet 6 inches.

Roads should be constructed of an all weather surface that is capable of supporting all legal loads and as approved by the AHJ.

iv. **Grades**

Grades should not exceed 10 percent, except as approved by the AHJ.

v. Bridges and Culverts

Bridges and culverts should be designed to accommodate high water flows and constructed using accepted engineering practices. Bridges should be constructed to accommodate the heaviest legal load allowed. Load limits should be posted on all bridges.

Vegetation should be cleared from around all bridges. Bridges should be constructed of noncombustible material.

vi. Property owners should provide emergency access to all open space within a subdivision. The access should be sufficient to provide access for wildland firefighting vehicles. The fire protection access should be approved by the AHJ.

vii. Roadside Fuel Reduction Recommendations should include:

- a) All areas within five (5') feet of each side of the driving surface on a public street or road should be cleared of all vegetation.
- b) For private streets or roads, the entire width of the private road easement shall be cleared of all vegetation.

b. **Gates.**

- i. The clear opening provided through gates should be 2 ft. (0.61 m) wider than the traveled way.
- ii. All gates should be located a minimum of 30 ft. (9.2 m) from the public right-of-way and shall not open outward.
- iii. Fire department personnel should have ready access to locking mechanisms on any gate that restricts access or the gate should be constructed to "break away."

c. **Signage**

- i. All roads should be identified with approved non-combustible, reflective road signs that meet the applicable local standard.
- ii. All residential or commercial structures within a subdivision should be clearly identified with address numbers that are plainly visible and legible from the street prior to occupancy.

4. **Alternative Development**

The AHJ may approve, or recommend approval of, an alternative development proposal when the overall design, as proposed by the applicant, meets or exceeds the intent of these guidelines and is not detrimental to public health, safety, and welfare.

5. **Miscellaneous**

a. **Mapping of Fire Protection Features**

All developments should provide a detailed site map, including all fire protection features (i.e., access roads, hydrants systems, water supply points, etc. installed in the development), to the AHJ.

b. **Maintenance of Equipment and Features**

- i. All fire protection equipment and features for new subdivisions should be properly maintained to provide at least the same level of performance and protection as originally designed.
- ii. Maintenance should be ensured through the use of whatever mechanism is acceptable to the AHJ.

SECTION III: WATER SUPPLY

A. WATER SUPPLY REQUIREMENTS

Due to the wide variety of situations and levels of fire protection that exist across the State of Montana, the location of each development will present a unique set of challenges for the AHJ. Therefore it is recommended that water supply solutions be developed cooperatively between the developer and the agency or agencies providing fire protection.

1. Minimum GPM Requirements

Regardless of the delivery method or source water, for the purposes of the protection of residential structures the water system should be capable of being supplied on site at a minimum of 1,000 gpm for a minimum of 30 minutes. The AHJ will determine location or locations of tanks and hydrants as necessary to meet the threat from wildland fire.

2. Interior Fire Sprinklers

The use of interior fire sprinklers falls within the jurisdiction of DLI. However, their use may be acceptable as an alternative fire suppression method when proposed by the developer and approved by the AHJ. Sprinkler use may allow a reduction in the water supply recommendations in “Minimum Requirements” above.

3. Water Source Requirements

Water sources should have a minimum annual water level or flow sufficient to meet the adequate water supply needs in accordance with this section. This water level or flow should not be rendered unusable because of freezing or seasonal low water. Adequate water flow and rights for access to the water source should be ensured in a form acceptable to the AHJ.

B. GUIDELINES

1. Water Supply Needs. Water supply needs may be satisfied by the use of:

- a. Pressurized water systems with hydrants as approved by AHJ.
- b. Draft sites from natural water sources such as ponds and streams as approved by the AHJ.
- c. Storage tanks with dry hydrants as approved by the AHJ.

The AHJ may suggest warning alarms in the event of lower than required water supplies.

2. **Draft Sites/Dry Hydrants**

- a. Whether the water source is manmade or natural, dry hydrants should be installed at all draft sites. The design, construction, locations access and maintenance plans for these sites should be approved by the AHJ.
- b. The draft site should have emergency vehicle access from an access road constructed in accordance with access requirements (see pages 14-15 and 21-22). Fire department access points should either be located along an access road or along an approved driveway that does not exceed 150 feet (45.720 meters) in length.
- c. Access to fire department draft sites should be designed to ensure that access roads and driveways are not obstructed. Accessibility should be provided in such a manner that responders will be able to withdraw water without having to go through extraordinary measures such as knocking down fences, etc.
- d. Natural water sources should have a minimum annual water level or flow sufficient to meet the adequate water supply needs as suggested by these guidelines. This supply should not be rendered unusable because of freezing. Adequate water flow and rights for access to the water source should be ensured in a manner acceptable to the AHJ.
- e. **Aquatic and Riparian Area Habitat Protection:** In order to protect aquatic and riparian area habitats, landowners and the local fire protection authority are strongly encouraged to consult with the local Montana Fish, Wildlife and Parks fisheries biologist in making plans to utilize a natural water source as a water supply for fire protection purposes.

3. **Pressurized Hydrant Systems**

- a. Pressurized hydrant systems should have a minimum usable water volume as determined by these guidelines. This water source should be equipped with an approved hydrant or hydrants. The water level of the water source should be maintained by rainfall, water pumped from a well, or by seasonal high water of a stream or river. The design construction, capacity, location, water level maintenance and access should be approved by the AHJ.

4. **Manmade Storage Systems (Tanks/Cisterns)**

- a. Manmade storage systems should have a minimum usable water volume as determined by these guidelines. This water source should be equipped with an approved hydrant or hydrants. The level of the water source should have a mechanism to maintain the water level at its capacity. This may be accomplished by rainfall, water pumped from a well, or by seasonal high water of a stream or river. The design construction, location, water level maintenance, access and access maintenance should be approved by the AHJ.

5. **Testing and Maintenance**

- a. Water sources, draft sites, hydrants and other fire protection equipment suggested by these guidelines should be subject to periodic tests as required by the AHJ.
- b. All such equipment installed under the provisions of these guidelines should be maintained in an operative condition at all times and should be repaired or replaced where defective. Additions, repairs, alterations, and servicing of such fire protection equipment and resources should be in accordance with standards approved by the AHJ.
- c. Defensible space of not less than 30 feet should be provided around water tank structures, water supply pumps and pump houses. Portions of trees and other combustible vegetation within 30 feet of the facilities shall be removed.
- d. Water supply facilities in the WUI dependent on electrical power to meet water supply demands should provide standby power systems to ensure that an uninterrupted water supply is provided. The standby power source should be capable of providing power for a minimum of two hours.
 - i. When approved by the AHJ, the standby power suggestion may be waived when the primary power service is underground.
 - ii. Standby power is not suggested when the water supply facility serves no more than one single family dwelling.

6. **Modifications**

- a. Fire flow requirements may be modified downward by the AHJ for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire flow is impractical.
- b. Fire flow may be modified upward by the AHJ where conditions indicate an unusual susceptibility to group fires or conflagrations. An upward modification should not be more than twice that suggested for the building or buildings under consideration.
- c. Water supply points may be developed at a single location or at a number of locations within the vicinity of the development. The location or locations should be determined in concert with the AHJ in order to best support suppression activities by the AHJ.

SECTION IV: FINANCIAL ASSISTANCE FOR DEVELOPMENT WITHIN THE WILDLAND/URBAN INTERFACE

A. CRITERIA FOR FINANCIAL ASSISTANCE

Montana Code Annotated 76-13-104(8)(b) provides that DNRC must adopt administrative rules addressing development in the wildland/urban interface, including but not limited to, criteria for providing grant and loan assistance to local government entities to encourage adoption of best practices for development in the wildland/urban interface.

In order to qualify for grant and loan assistance, local government entities must adopt a Community Wildfire Protection Plan, or its equivalent, and these Guidelines, or their equivalent by October 1, 2009. These criteria will only apply to loans and grants to provide for fuel mitigation actions, fire prevention, and infrastructure improvements. Current grant programs affected include the *Western States Wildland Urban Interface* mitigation grants and the *Community Wildfire Protection* grants.

Current suppression assistance; including grants of equipment, provided firefighter training, suppression costs, and funds allocated via the federal Volunteer Fire Assistance or Rural Fire Assistance programs are not affected by this requirement.

APPENDIX A

HOMEOWNER'S CODE OF RESPONSIBILITY RESPONSIBILITIES OF PROPERTY OWNERS IN THE WILDLAND/URBAN INTERFACE

Property owners, residents and visitors in areas threatened by wildfire have a responsibility for their own life safety. Understanding the risks of living or being in the Wildland/Urban Interface (WUI) is part of that responsibility.

The two keys to your survival and that of your property are early preparedness and clear decision-making at the time of the threat. Perform fuels mitigation; create survivable space areas around your buildings. You must also prepare yourself. Learn some of the risks of staying or evacuating. Evaluate whether you are physically and emotionally prepared to stay, and whether other family members will be able to cope with evacuating (including possibly leaving someone behind) or staying. This will enable you to make good decisions during a wildfire threat.

A. PREPARING YOUR PROPERTY

In order for your assets, structures, and property to have the best opportunity to survive a wildfire and to be defended safely, these basic principles must be followed.

1. Assets, structures, and property have to be properly prepared and maintained **before** a wildfire threatens them. Utilize the guidelines and best practices in this document to assist in preparation. If you have further questions, contact your local fire district or department.
2. Do not assume firefighters will be readily available to defend your property. Prepare your property to survive a major wildfire without firefighter intervention. You must have good access, fire-resistant structures and landscaping, an adequate water supply, and a safe area ready in advance. This will also make defending your property more effective whether you are defending it yourself or receive assistance from firefighters.

B. CREATING A FIRE PLAN

Develop a plan to address your own options for dealing with a wildfire threatening your assets, structures, and property.

1. Know where fire is likely to be a threat to your property and evaluate how to access or exit your property safely.
2. Learn and evaluate the risks of evacuating on mid-slope roads and roads where heavy fuel loads are present.

4. Understand weather patterns and the likely effects weather will have. This will help you decide whether you should evacuate or stay at your property.
5. Know where your safe zones are.

B. EVACUATING

Evacuate early if you have any doubts about the survivability of your property, your personal safety, and your physical and/or mental ability to stay. Know likely evacuation routes; make sure everyone knows evacuation plans such as the location you and/or your family will evacuate to in case you are split up for any reason, including someone staying behind. Keep in mind that one of the highest risks during a wildfire is traveling on evacuation routes and roads. Even during an early evacuation, fire can cut off your evacuation route. Listen to the advice of local law enforcement and fire protection officers and make your decisions accordingly.

E. CONCLUSION

The decision whether to stay or go is yours. You have a legal right to remain and defend your property. Every situation is different and has to be evaluated at the time of the threat. What is right for you might not be right for someone else under the same circumstances. However, you must be confident you are making the best possible decision for your safety and that of your family and others involved with you. Property preparation and educating yourself and your family on the dangers of staying or evacuating during a wildfire will make that possible.

PROTECTION ZONE GUIDELINES

Zones	Requirements	Recommendations	Comments
Zone A - Structure Zone			
0-5 feet from structure	<ul style="list-style-type: none"> *Maintain non-combustible ground material 2-3 feet around structure (Planting beds, rock gardens, pavers, gravel or bare soil). *Fire resistant plants required (See <i>Fire Resistant Plants for Montana Landscapes and Fire and Your Landscape</i>). *Remove all pine needles & flammable ground materials. *Prune tree limbs & branches within 10' of the roof. *Remove tree limbs & branches within 10' of chimney. *Use <i>Firewise</i> construction and landscaping concepts in this zone. 	<ul style="list-style-type: none"> * Maintain low combustible ground covers. * Minimize flammable vegetation in this zone provided it: <ul style="list-style-type: none"> - does not touch or overhang the home - are not species that retain dead material or deposit excessive quantities of ground fuel; and - is located far enough away from the home so that they will not ignite the home by direct flame contact or radiant heat emission. *Seasonally: <ul style="list-style-type: none"> - keep roof and rain-gutters clear of needles and leaves. - Store firewood outside the landscape zone during fire season. 	Wildland fire is the #1 threat to the residents of Montana. The goal in this zone is to reduce the potential home ignition sources. What is done now will greatly enhance structure survivability and fire fighter safety.
Zone B - Landscape Zone			
6-30+ feet from structure	<ul style="list-style-type: none"> *Maintained lawn or mowed grass (3-4") *Remove pine needles and flammable ground materials *Prune all trees so the lowest limbs are at least 6 to 10 feet above the ground. *Min 30 feet between crowns of native trees or "clumps", (max 5 feet trees/clump). *Maintain 20 feet between planting islands & groups of shrubs. 	<ul style="list-style-type: none"> * Keep lawns watered, (as conditions allow). * Consider planting beds, rock gardens, xeriscaping and fire resistant plants. * Use bedding plants (<18" high). * Consider non-flammable landscape material. * If a moderate or high hazard area, consider fire-resistant materials for patio furniture and other accessories around the home. * Keep patio cushions inside the home when not in use during periods of high fire potential. 	The goal in this zone is to reduce radiant heat and to provide the critical space where fire fighters might be deployed to defend the home.
Zone C - Forest/Wildland Transition Zone			
From 31 feet to 100+ feet from home	<ul style="list-style-type: none"> *Mow the grassy fuels annually *Preferred densities for native trees: <ul style="list-style-type: none"> - Spacing – 20' X 20' *Remove all ladder fuels. *Maintain 20 feet between crowns of native trees or "clumps" (max 5 trees/clump) *20 feet between planting islands. *Prune native tree limbs 15 feet from ground or 1/3 of live crown, which ever is less. 	<ul style="list-style-type: none"> * Consider a mixture of deciduous and coniferous trees. Most deciduous trees do not support high intensity fires. * Provide added protection with "fuel breaks," such as driveways, gravel walkways, and lawns. * Provide access through fences for fire apparatus access to your remaining property. * Consider coordination with neighboring properties. * Store firewood and other combustibles in this Zone. * Recommend modifying the fuels to the property line for lots ≤ 2.5 acres. 	Treatment in this zone will create conditions unfavorable for a crown fire, and transition the wildland fire to a ground fire. Tree spacing is intended to reduce the ability to sustain a crown fire and to provide a radiant heat barrier to the residence.

Definitions:

Clumps – Groups of trees where crowns are less than 10' apart

Crown – Outer edge of tree or "clumps" of trees

Native trees – Lodgepole Pine, Douglas-fir, Ponderosa Pine, Douglas Fir, Rocky Mountain Juniper, Spruce, Quaking Aspen

Pine needle removal – rake only down to the decomposing layer to avoid erosion problems

Ladder fuels – vegetation of different heights, close enough to allow a surface fire to spread vertically to the top of a tree.

PROTECTION ZONE GUIDELINES

Zones	Requirements	Recommendations	Comments
Zone D - Property Perimeter Buffer			
120+ foot wide buffer around perimeter	<ul style="list-style-type: none"> *Remove heavy accumulations of woody debris, such as piles of stem wood or branches. *Preferred densities for native trees: <ul style="list-style-type: none"> - Spacing – 15 X 15 *Remove all ladder fuels. *Maintain 15 feet between crowns of native trees or “clumps” (max 5 trees/clump) *10 feet between planting islands. 	<ul style="list-style-type: none"> * Prune native tree limbs min 8 -15 feet from ground or 1/3 of crown, which ever is less. * Coordinate with neighboring properties. * Treat entire perimeter of property. 	Consistent application of these treatments will create conditions where a crown fire could be transformed into a ground fire, slowing its rate of spread and creating an opportunity for fire suppression resources to safely respond. This zone starts at the property line and comes in a minimum of 120 feet.

Definitions:

Clumps – Groups of trees where crowns are less than 10’ apart

Crown – Outer edge of tree or “clumps” of trees

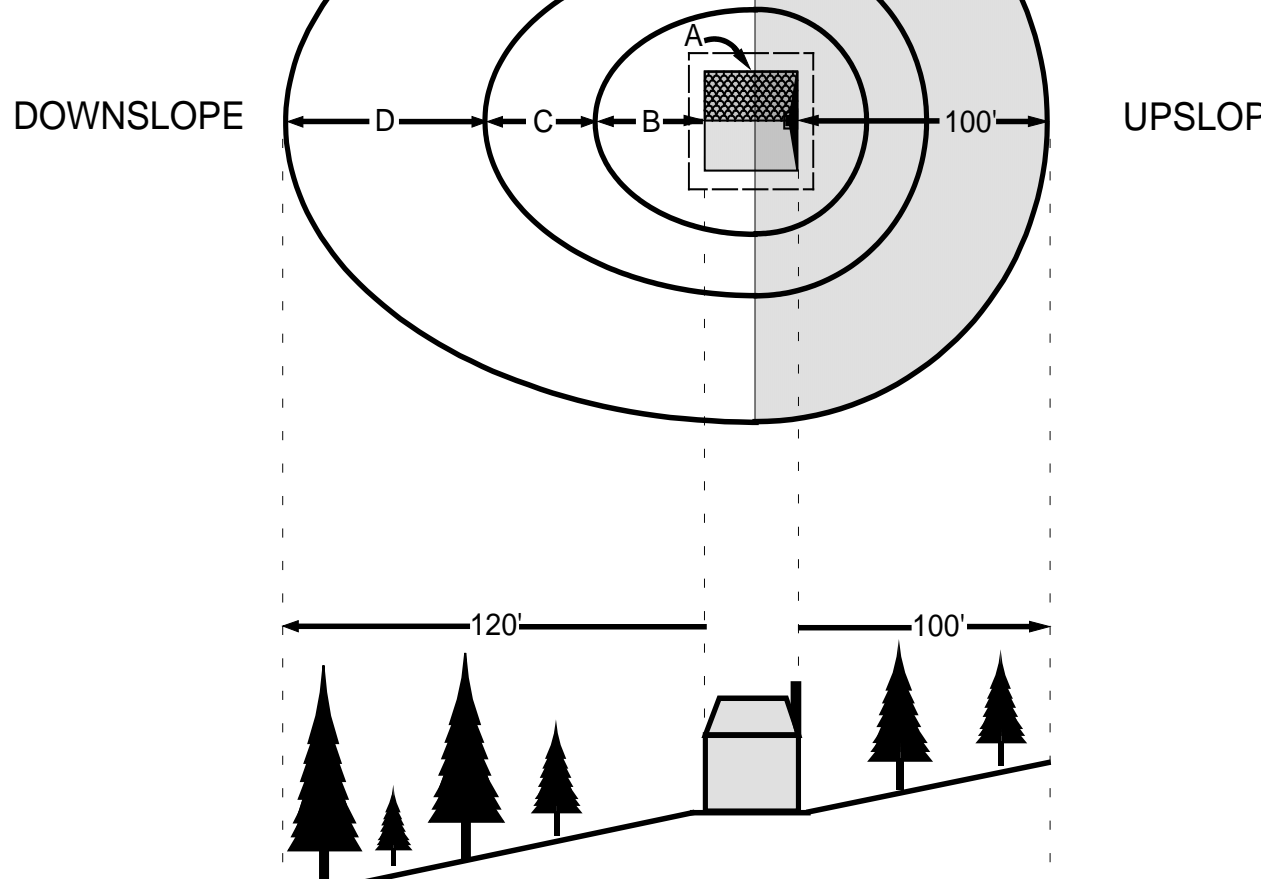
Native trees – Lodgepole Pine, Douglas-fir, Ponderosa Pine, Douglas Fir, Rocky Mountain Juniper, Spruce, Quaking Aspen

Pine needle removal – rake only down to the decomposing layer to avoid erosion problems

Ladder fuels – vegetation of different heights, close enough to allow a surface fire to spread vertically to the top of a tree

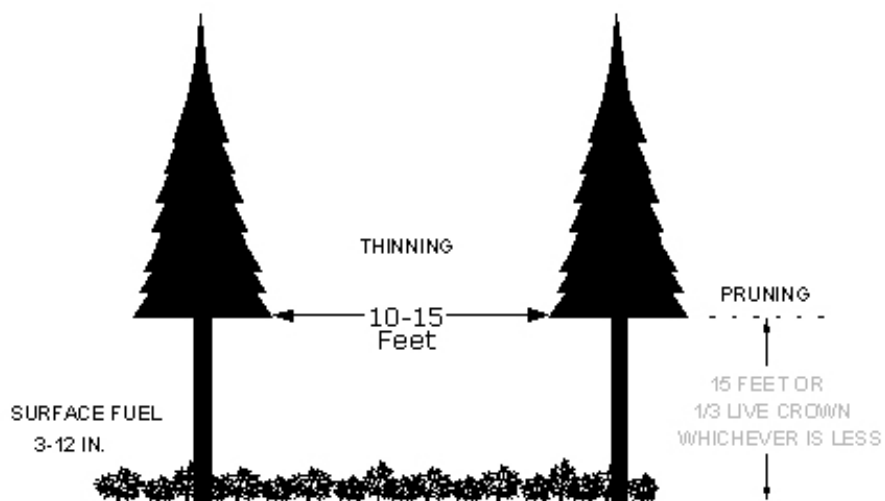
Protection Zone Guidelines

As slope increases, the need for larger protection zones increases. This chart indicates the minimum suggested distances from the structure or structures to be protected by the defensible space zones. Each of these distances indicates concentric rings spreading out from Zone A.



Percent Slope	Zone B Minimum	Zone C Minimum	Zone D Minimum
0-10	10 feet'	20'	70'+
10-20	15'	25'	80'+
20-30	20'	30'	100'+

Thinning and Pruning



Thin trees to 10-15 feet between crowns.

Prune limbs on all remaining trees to 15 feet or 1/3 of total crown height, whichever is less.

Maintain surface vegetation at 12" or less.

APPENDIX C

SOURCES

PUBLICATIONS	
Available From (Organization)	Publication
Montana DNRC Fire and Aviation Bureau 2705 Spurgin Road Missoula, MT 59804 (406) 542-4250	<i>Fire Risk Rating For Existing and Planned Wildland Interface Developments in Montana</i>
International Code Council 4051 West Flossmoor Road Country Club Hills, IL 60478-5795 www.iccsafe.org/cs/	<i>International Wildland/Urban Interface Code</i> <i>International Fire Code</i>
National Fire Protection Association (NFPA) 1 Batterymarch Park Quincy, Massachusetts 02169-7471 www.nfpa.org/	<i>NFPA 1, Fire Code</i> <i>Annex H</i> <i>Annex I</i> <i>NFPA 1142, Standard on Water Supplies for Suburban and Rural Fire Fighting</i> <i>NFPA 1144, Standard for Reducing Structure Ignition Hazards from Wildland Fire</i>
U.S. Fire Administration 16825 S. Seton Ave. Emmitsburg, MD 21727 www.usfa.dhs.gov/	<i>Water Supply Systems and Evaluation Methods Vol. I & II</i>
Montana State University Extension Office 416 Culbertson Hall, Montana State University–Bozeman Bozeman MT 59717 www.montana.edu/wwwpb/pubs/mt200101AG.pdf	<i>Fire-Resistant Plants for Montana Landscapes</i>
WEBSITES	
Organization	Website
Firewise	www.firewise.org
FireSafe Montana	www.firesafemt.org/index.php
Keep Montana Green	www.keepgreen.org